

## THE OVIPOSITING MECHANISM OF TREMEX COLUMBIA

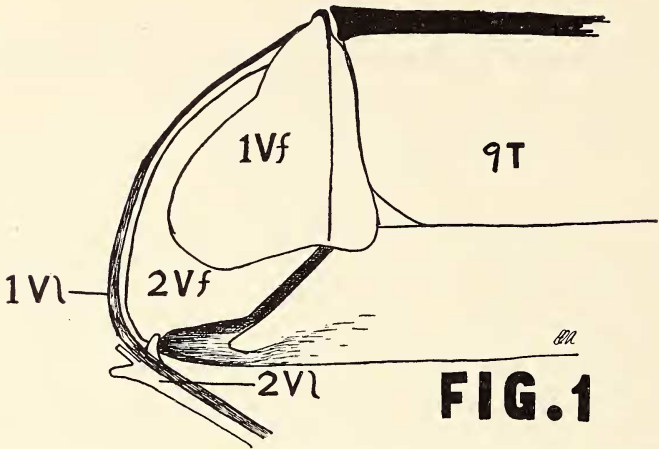
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The ovipositing mechanism of *Tremex columba* is similar to that of *Megarhyssa lunator*, but it differs from the latter in the following particulars: 1, all of the external hard parts of the drilling mechanism are short, compact, and sturdy; 2, the ovipositor itself is shorter than the abdomen, so that, unlike that of *Megarhyssa*, it does not become looped within the intersegmental membranes; 3, the muscles are large, and so arranged that a maximum drilling force is exerted.

Figs. 1 and 2 illustrate the chitinous parts of the mechanism. In the first drawing, which shows the external aspect of the left side, the second valve has been detached from the right valvifer and the whole ovipositor is twisted toward the observer. Notice, in Fig. 2, that the muscle tendon (MT) is wide and flat, as is also the posterior portion of internal ridge appearing just above it. This tendon is shown in greater detail in Fig. 3. It is about 7 mm. long and 2 mm. wide. The muscle (6) attached to it, and to the walls of the ninth tergum, draws the second valvifer (2Vf) toward the tergum, in so doing extends the lancet (1Vl in Figs. 1 & 2). Note that the tendon, unlike that of *Megarhyssa*, which is attached some distance down the margin of the plate, is fastened to the recurved end of the valvifer, in this way exerting a maximum pulling force. This may also compensate for the relatively small size of the muscle (5) which has a similar action, and which in *Megarhyssa* is large.

Muscle 3, by sliding the tergum back, rotates the first valvifer (1Vf) back, thus retracting the lancet. Muscle 7 corresponds with the dorsoventral muscle found in *Megarhyssa*. The muscles 1 extend the ovipositor before drilling begins.

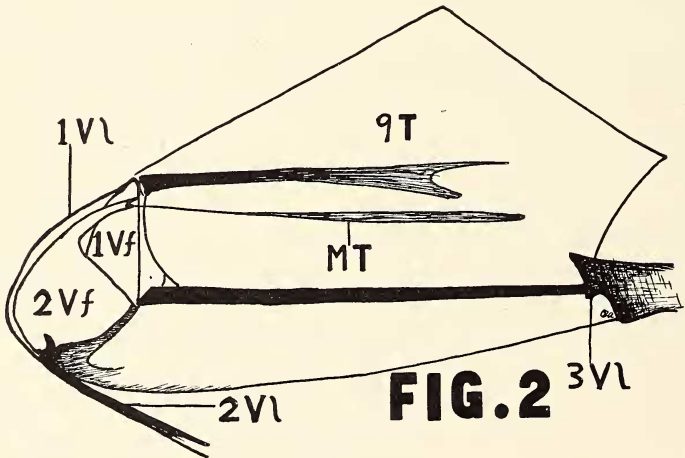
The muscle 2 deserves brief consideration. It appears to be stretched between the upper and lower margins of the second valvifer. A corresponding muscle in *Megarhyssa* I have de-



scribed as attached to the first valvifer, but Snodgrass claims, and I think correctly, that the muscle is attached in *Megarhyssa* as it is in *Tremex*. Snodgrass also states that this muscle is peculiar to the *Hymenoptera*.

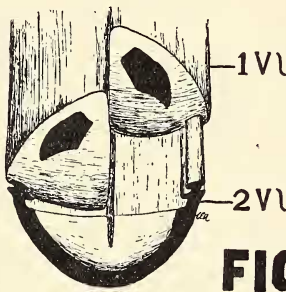
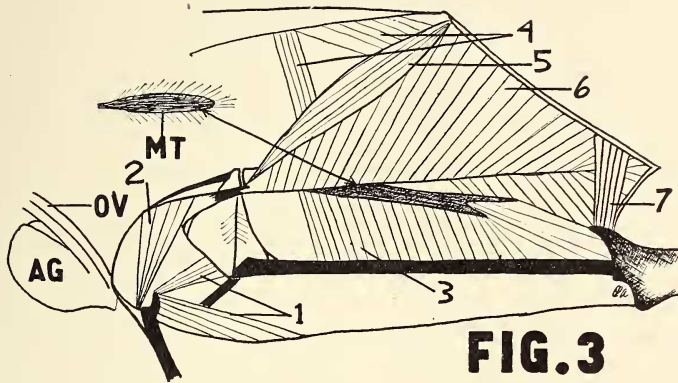
Of course the parts so far described (with the exception of the second valves, which are fused) represent *one side only*; the mechanism is duplicated on the opposite side of the animal.

The *ovipositor* proper is broadly oval in outline with the long axis vertical—not V-shaped as in *Megarhyssa*. In Fig. 4 it is represented in section with one of the lancets (first valve) partly



withdrawn. The *third valves*, though technically part of the ovipositor, take no part in the drilling. The proximal end of one is shown in Figs. 2 & 3.

All of the drawing are  $\times 8$ , and are drawn to scale. OV and AG in Fig. 3 represent the oviduct and accessory gland respectively.



The general impression one obtains from an examination of this mechanism is that it is fitted for much more strenuous use than is that of *Megarhyssa*. This becomes more significant when one knows, through observation, that *Tremex* actually *drills* through more or less solid wood, while the oviposition of *Megarhyssa* is confined to insertion of the ovipositor through the bark to the open end of a burrow, and down the burrow the length of the instrument.

LITERATURE CITED

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